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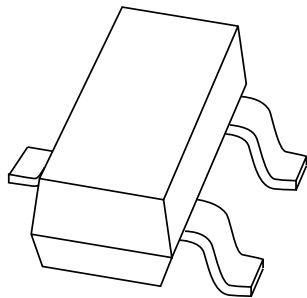
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Kind regards,

Team Nexperia

DATA SHEET



BAS29; BAS31; BAS35 General purpose controlled avalanche (double) diodes

Product data sheet
Supersedes data of 2001 Oct 10

2003 Mar 20

General purpose controlled avalanche (double) diodes

BAS29; BAS31; BAS35

FEATURES

- Small plastic SMD package
- Switching speed: max. 50 ns
- General application
- Continuous reverse voltage: max. 90 V
- Repetitive peak reverse voltage: max. 110 V
- Repetitive peak forward current: max. 600 mA
- Repetitive peak reverse current: max. 600 mA.

APPLICATIONS

- General purpose switching in e.g. surface mounted circuits.

DESCRIPTION

General purpose switching diodes fabricated in planar technology, and encapsulated in small rectangular plastic SMD SOT23 packages. The BAS29 consists of a single diode. The BAS31 has two diodes in series. The BAS35 has two diodes with a common anode.

MARKING

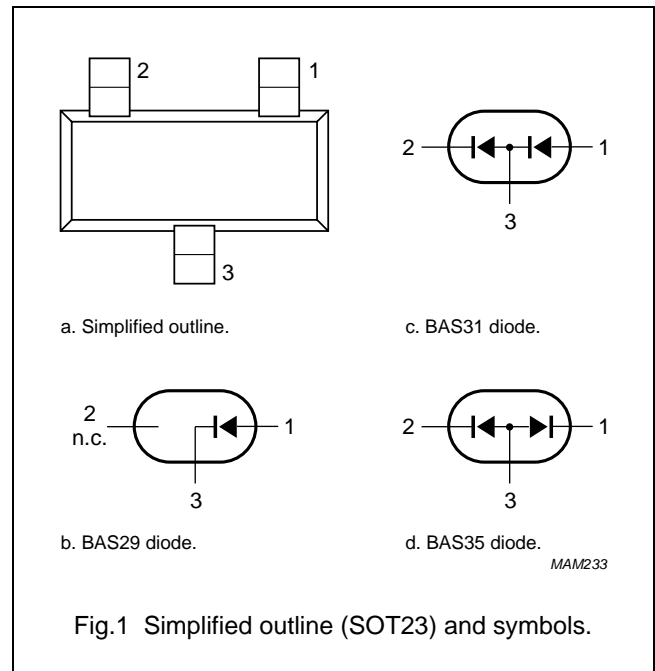
| TYPE NUMBER | MARKING CODE ⁽¹⁾ |
|-------------|-----------------------------|
| BAS29 | L20 or *A8 |
| BAS31 | L21 or *V1 |
| BAS35 | L22 or *V2 |

Note

- * = p : Made in Hong Kong.
 * = t : Made in Malaysia.
 * = W : Made in China.

PINNING

| PIN | DESCRIPTION | | |
|-----|---------------|-------------------|--------------|
| | BAS29 | BAS31 | BAS35 |
| 1 | anode | anode | cathode (k1) |
| 2 | not connected | cathode | cathode (k2) |
| 3 | cathode | common connection | common anode |



General purpose controlled avalanche (double) diodes

BAS29; BAS31; BAS35

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134).

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|------------------|-------------------------------------|--|------|------|------|
| Per diode | | | | | |
| V_{RRM} | repetitive peak reverse voltage | | – | 110 | V |
| V_R | continuous reverse voltage | | – | 90 | V |
| I_F | continuous forward current | single diode loaded; see Fig.2; note 1 | – | 250 | mA |
| | | double diode loaded; see Fig.2; note 1 | – | 150 | mA |
| I_{FRM} | repetitive peak forward current | | – | 600 | mA |
| I_{FSM} | non-repetitive peak forward current | square wave; $T_j = 25\text{ °C}$ prior to surge; see Fig.4 | | | |
| | | $t = 1\ \mu\text{s}$ | – | 10 | A |
| | | $t = 100\ \mu\text{s}$ | – | 4 | A |
| | | $t = 1\ \text{s}$ | – | 0.75 | A |
| P_{tot} | total power dissipation | $T_{amb} = 25\text{ °C}$; note 1 | – | 250 | mW |
| I_{RRM} | repetitive peak reverse current | | – | 600 | mA |
| E_{RRM} | repetitive peak reverse energy | $t_p \geq 50\ \mu\text{s}$; $f \leq 20\ \text{Hz}$; $T_j = 25\text{ °C}$ | – | 5 | mJ |
| T_{stg} | storage temperature | | –65 | +150 | °C |
| T_j | junction temperature | | – | 150 | °C |

Note

1. Device mounted on an FR4 printed-circuit board.

General purpose controlled avalanche (double) diodes

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ELECTRICAL CHARACTERISTICS

$T_j = 25\text{ °C}$ unless otherwise specified.

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|------------------|-------------------------------------|---|------|------|---------------|
| Per diode | | | | | |
| V_F | forward voltage | see Fig.3 | | | |
| | | $I_F = 10\text{ mA}$ | – | 750 | mV |
| | | $I_F = 50\text{ mA}$ | – | 840 | mV |
| | | $I_F = 100\text{ mA}$ | – | 900 | mV |
| | | $I_F = 200\text{ mA}$ | – | 1 | V |
| | | $I_F = 400\text{ mA}$ | – | 1.25 | V |
| I_R | reverse current | see Fig.5 | | | |
| | | $V_R = 90\text{ V}$ | – | 100 | nA |
| | | $V_R = 90\text{ V}; T_j = 150\text{ °C}$ | – | 100 | μA |
| $V_{(BR)R}$ | reverse avalanche breakdown voltage | $I_R = 1\text{ mA}$ | 120 | 170 | V |
| C_d | diode capacitance | $f = 1\text{ MHz}; V_R = 0$; see Fig.6 | – | 35 | pF |
| t_{rr} | reverse recovery time | when switched from $I_F = 30\text{ mA}$ to $I_R = 30\text{ mA}$; $R_L = 100\ \Omega$; measured at $I_R = 3\text{ mA}$; see Fig.7 | – | 50 | ns |

THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|----------------|---|------------|-------|------|
| $R_{th\ j-tp}$ | thermal resistance from junction to tie-point | | 360 | K/W |
| $R_{th\ j-a}$ | thermal resistance from junction to ambient | note 1 | 500 | K/W |

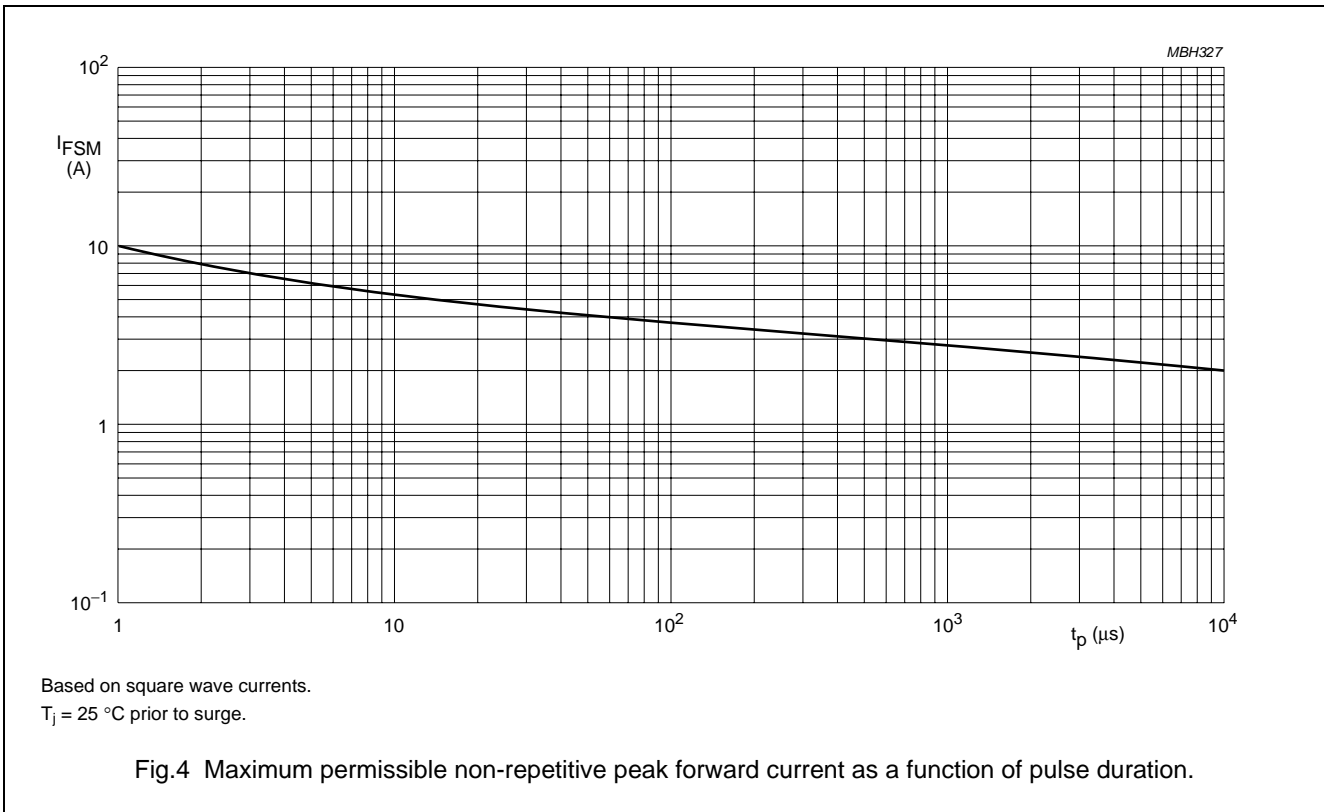
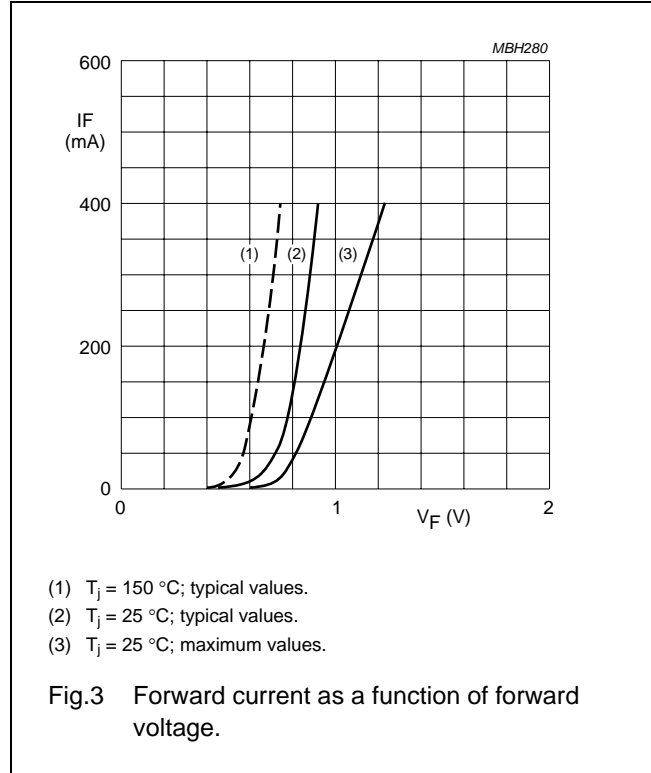
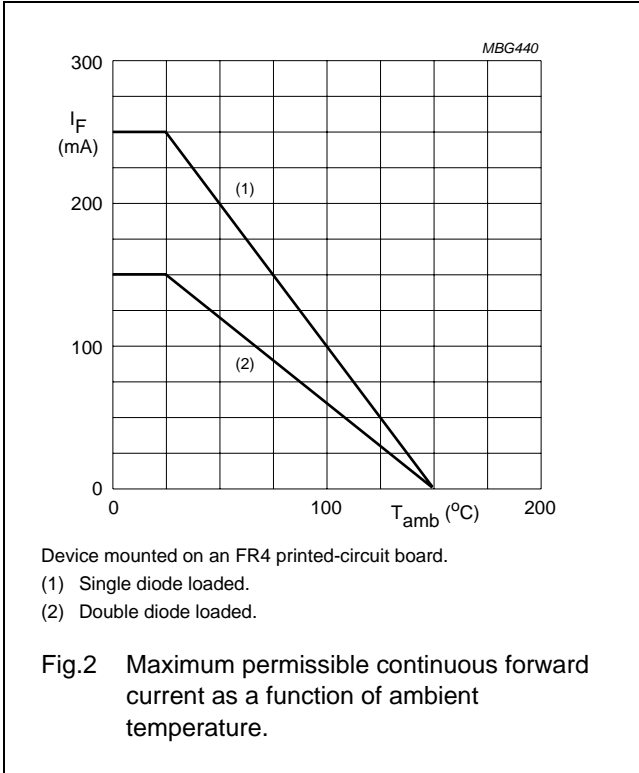
Note

1. Device mounted on an FR4 printed-circuit board.

General purpose controlled avalanche
(double) diodes

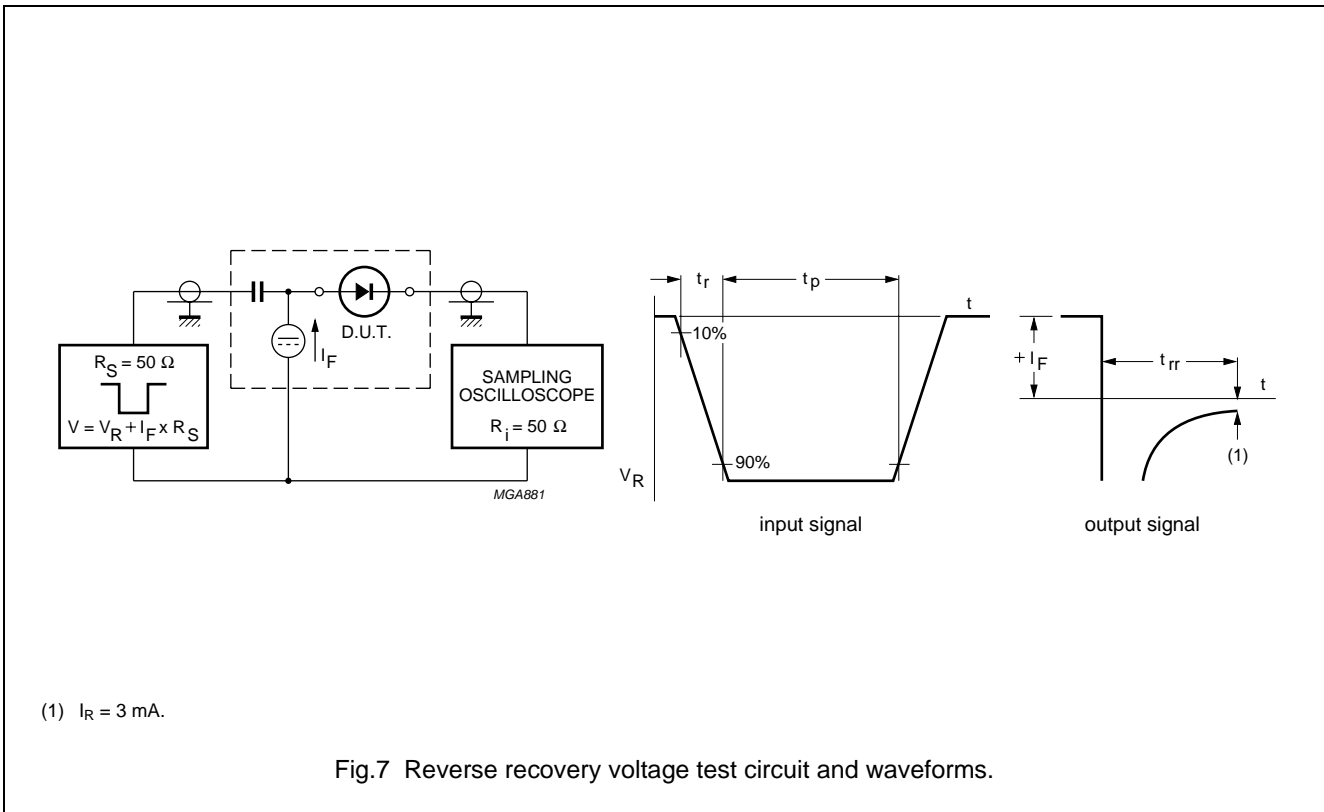
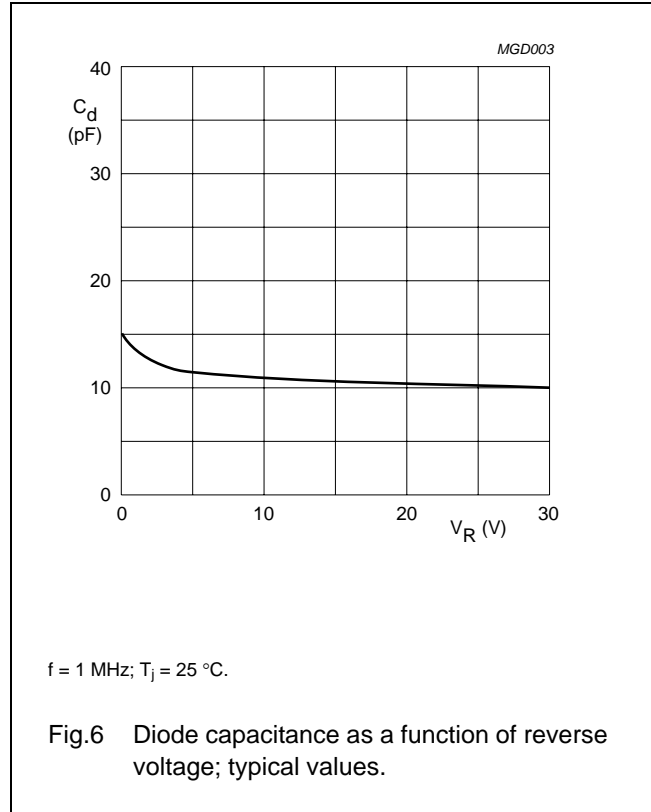
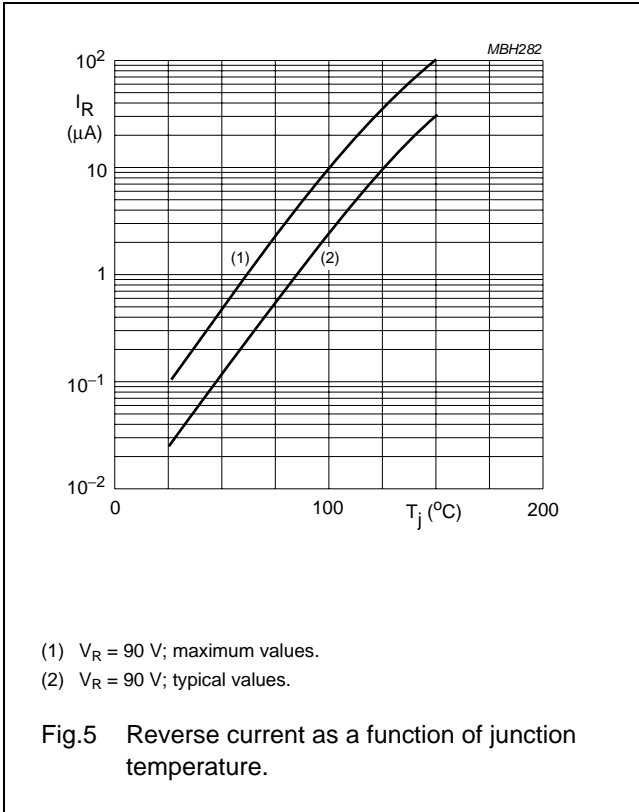
BAS29; BAS31; BAS35

GRAPHICAL DATA



General purpose controlled avalanche
(double) diodes

BAS29; BAS31; BAS35



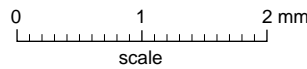
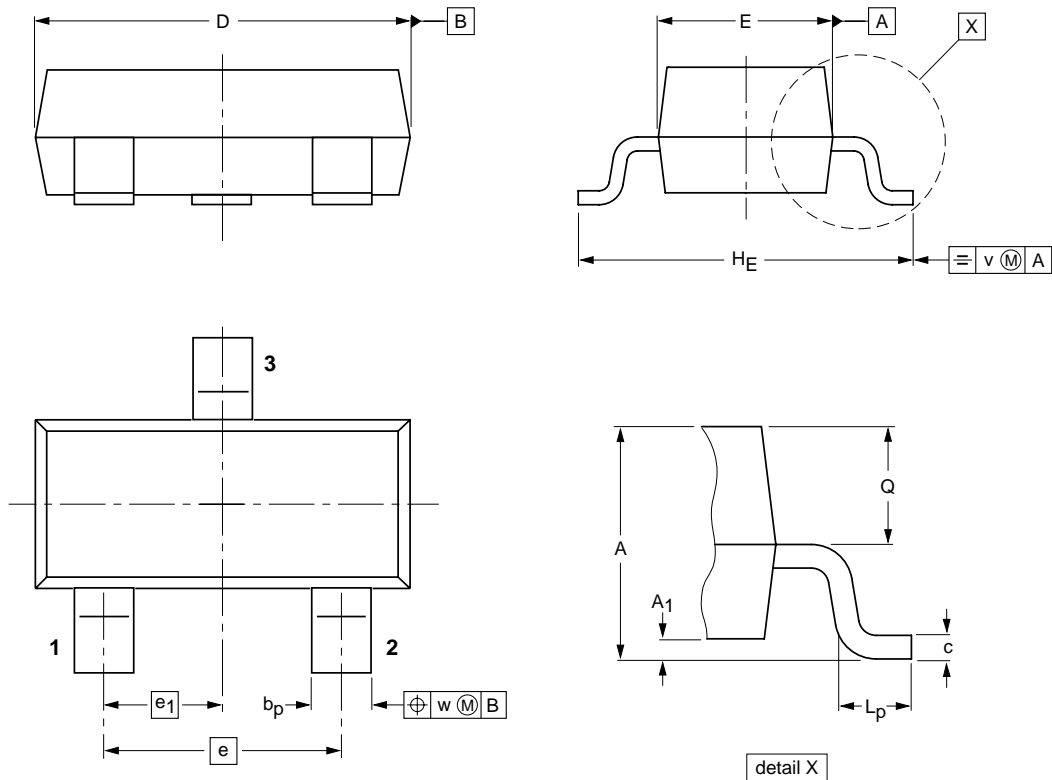
General purpose controlled avalanche
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PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT23



DIMENSIONS (mm are the original dimensions)

| UNIT | A | A ₁ max. | b _p | c | D | E | e | e ₁ | H _E | L _p | Q | v | w |
|------|------------|------------------------|----------------|--------------|------------|------------|-----|----------------|----------------|----------------|--------------|-----|-----|
| mm | 1.1 0.9 | 0.1 | 0.48 0.38 | 0.15 0.09 | 3.0 2.8 | 1.4 1.2 | 1.9 | 0.95 | 2.5 2.1 | 0.45 0.15 | 0.55 0.45 | 0.2 | 0.1 |

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|--------------------|------------|----------|------|--|------------------------|---------------------------------|
| | IEC | JEDEC | EIAJ | | | |
| SOT23 | | TO-236AB | | | | 97-02-28 99-09-13 |

General purpose controlled avalanche
(double) diodes

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DATA SHEET STATUS

| DOCUMENT STATUS ⁽¹⁾ | PRODUCT STATUS ⁽²⁾ | DEFINITION |
|--------------------------------|-------------------------------|---|
| Objective data sheet | Development | This document contains data from the objective specification for product development. |
| Preliminary data sheet | Qualification | This document contains data from the preliminary specification. |
| Product data sheet | Production | This document contains the product specification. |

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NXP Semiconductors

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Contact information

For additional information please visit: **<http://www.nxp.com>**

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Телефон: 8 (812) 309 58 32 (многоканальный)

Факс: 8 (812) 320-02-42

Электронная почта: org@eplast1.ru

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.